



# PATENT ABSTRACTS OF JAPAN

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## (54) LIQUID CRYSTAL DISPLAY ELEMENT

### (57)Abstract:

**PURPOSE:** To improve the quality such as the uniformity in the orientation of a liquid crystal, the durability, the transparency, etc. by subjecting a polyimide resin consisting of a prescribed repeating unit to a rubbing treatment and using such resin as a liquid crystal oriented film.

**CONSTITUTION:** The oriented film of the liquid crystal consisting of the polyimide resin of which at least  $\geq$  90mol% of the constituting unit obtd. by subjecting the cyclobutane-1,2; 3,4-tetracarboxylic dianhydride expressed by the formula II and the arom. diamine expressed by the formula III (where R: the bivalent arom. hydrocarbon group) to polycondensation to obtain a polyamic acid then subjecting the same to dehydration ring closure consists of the polyimide resin expressed by the formula I (where R is the same as in the formula III) and an insulating film are used. The polyimide resin to be used is substantially free from coloring, has high heat resistance in addition to excellent transparency, is hardly attacked by many chemicals including org. solvents, acids and alkalis and has the excellent uniformity in the orientation of the liquid crystal and the durability.

